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EXTENDED ABSTRACT

A29 Gonorrhea: a brief history of evolution

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Introduction

Gonorrhea is a disease caused by Neisseria gonorrhoeae and it was responsible for about 80.7 million infections in the year 2016, worldwide. It is a disease transmitted by sexual contact and is most frequently detected in men, as in Europe during the year 2017 there was a male-to-female ratio of 3.2:1. Its incidence in Europe has been increasing.

In Portugal, this illness is included in the list of notifiable diseases, therefore it is important to assess the geographical and temporal distribution of gonorrhea notifications in order to understand whether further measures are needed to reduce the number of new notifications.

The aim of this study is to compare the geographic distribution of gonorrhea notifications in mainland Portugal and assess the temporal evolution of gonorrhea notifications in mainland Portugal, between 2015 and 2018.

Methods

Descriptive observational study of the ecological type, with data collected from PORDATA and the National Health Service's Transparency Portal, processed and combined with the R (3.4.2) for the production of distribution graphs. To obtain the distribution by NUT-III, the number of gonorrhea notifications were obtained from the National Health Service's Transparency Portal and PORDATA. A new variable was obtained, resulting from the quotient between the number of notifications per NUT-III and the size per NUT-III, per 100,000 inhabitants.

A matrix of maps was obtained through an R script [2015,2016,2017,2018] * [Male and Female, Male, Female], with coding for graphical filling of the map, for each prevalence range. It was defined in order to obtain a sufficient and possible discrimination between assigned shades of the same color. The municipalities of the same NUT-III received the same value and the dimensions of the maps were adjusted proportionally between the area of the map and the number of notifications.

A linear model for a short temporal series (Jan/2015-Dez/2018, monthly resolution) was created with a trend component and a seasonal component (the seasonal pattern was approximated by fourier terms).

Results

The Metropolitan Area of Lisbon (NUT-III) is the region with a constantly high prevalence rate of gonorrhea, followed by the Metropolitan Region of Porto (NUT-III). There is a clear increase in the number of notifications between 2015 to 2018 (trend coef. 1.1792, p<0.0001). The model fit (Adj R^2=0.5772, F=13.83 on 5 and 42 DF, p<0.0001) shows a periodic component [coef fourier (df, 2)S2-12=6.7334, p=0.0272] (see fig 1 and 2).

Gonorrhea notifications were always higher in male population (all data male-to-female 8.8:1.

tab.1 Buys-Ballot table for the data Gonorrhea (2015-2018) series

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	$\bar{X}_{i.}$	$\sigma^2_{i.}$
2015	15	34	42	37	29	36	44	71	43	45	40	32	39.0	170.4
2016	42	25	47	21	44	31	31	48	36	26	53	63	38.9	161.5
2017	71	72	53	35	54	44	61	51	50	59	57	49	54.7	109.31
2018	90	78	56	78	53	68	93	102	117	88	79	74	81.3	332.6
$\bar{X}_{.j}$	54.5	52.3	49.5	42.8	45.0	44.8	57.3	68.0	61.5	54.5	57.3	54.5		
$\sigma^2_{.j}$	1083.0	709.6	39.0	602.9	134.0	268.9	718.9	618.0	1401.7	681.7	262.9	329.7		

source of data: Pordata, 2021; National Health Service's Transparency Portal,2019

Keywords:
Gonorrhea, infectious disease, Neisseria gonorrhoeae.

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Conflict of interest:
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tab.2 Seasonal decomposition of Gonorrhea (2015-2018) series

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	24.5892	4.2908	5.73	0.0000
trend	1.1792	0.1534	7.69	0.0000
fourier(df, 2)S1-12	-2.8185	2.9851	-0.94	0.3505
fourier(df, 2)C1-12	1.4837	2.9337	0.51	0.6157
fourier(df, 2)S2-12	6.7334	2.9417	2.29	0.0272
fourier(df, 2)C2-12	-3.4292	2.9337	-1.17	0.2490

source of data: Pordata, 2021; National Health Service's Transparency Portal,2019

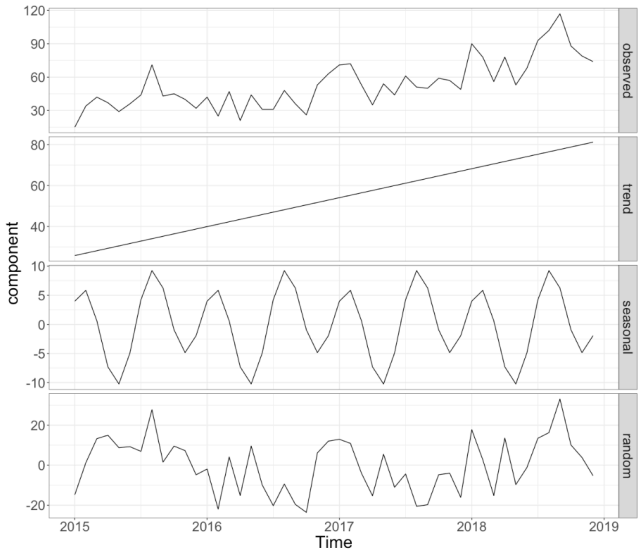

Figure 1 - Graphic representation of a distribution seasonal model of gonorrhea infections between 2015 and 2019

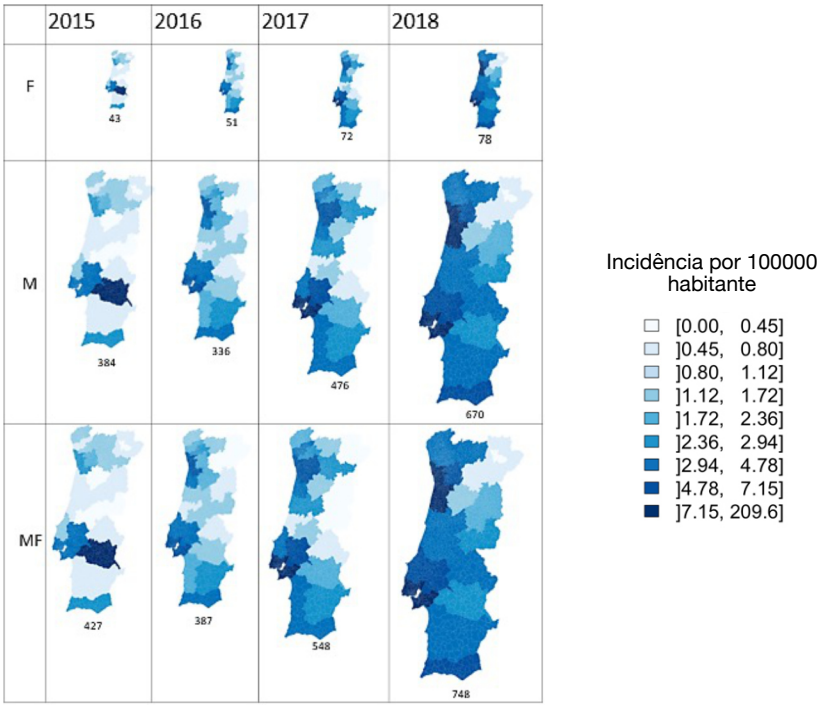

Figure 2 - Geographic representation of gonorrhea incidence in Portugal

Discussion

Gonorrhea is a major cause of morbidity among sexually-active individuals worldwide and these data revealed a need for intervention in this area. A more detailed study in the urban areas, particularly in Lisbon and Porto, should be a matter of great importance.

References

1. Pordata, 2021; National Health Service's Transparency Portal, 2019